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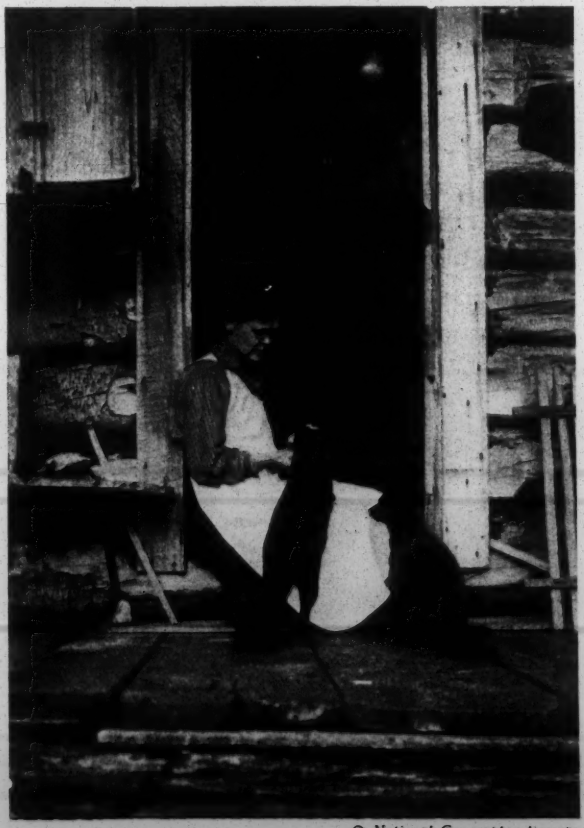

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FEEDING BLUE FOXES ON AN ALASKAN ISLAND
(See Bulletin No. 4.)

HOW TO OBTAIN THE BULLETIN

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Earthquakes' Toll in Great Cities of All Ages

THE EARTHQUAKE and fire that destroyed Tokyo and Yokohama in a large part seem to constitute the greatest calamity, measured by the reported loss of life, that has ever fallen on any of the great cities of the world. But there is a long string of disasters resulting from earthquakes that have visited great cities in the past which are at least comparable and which loomed big in the minds of the world at the time they occurred.

The next greatest calamity of the sort in modern times was the earthquake that in 1908 shook a great slice of Messina, Sicily, into the sea and killed on both the Sicilian and Italian sides of the straits more than 75,000 people. In this case fire played no important part in bringing about the destruction, practically all the deaths resulting from falling masonry or from drowning.

Lisbon Disaster Stood Out in Its Age

The disaster which long stood out as the greatest and most destructive of recent centuries was the tidal wave which swept over the city of Lisbon, capital of Portugal, in 1755. The loss of life in that catastrophe was probably between 50,000 and 60,000.

America's outstanding calamity to a large city resulting from an earthquake was the destruction of San Francisco in 1906. An earthquake severed the water supply lines, and when fire broke out immediately afterwards it soon spread over practically the whole city. Although only about 700 people lost their lives, the property damage amounted to some $200,000,000.

Charleston, S. C., is the only other city of importance in the United States that has suffered from an earthquake. In 1886 a severe quake shook down chimneys and houses in Charleston, but resulted in the loss of only twenty-seven lives.

Port Royal a Modern Sodom and Gomorrah

In the West Indies the most dramatic earthquake incident that has occurred was the slipping of a large part of old Port Royal, Jamaica, into the sea in 1692. This was in the days of the buccaneers, many of whom frequented Port Royal and gave it the name of one of the world's wickedest cities. The superstitious saw in the destruction of the town a modern version of the wiping out of Sodom and Gomorrah.

The chief cities of Central America, excepting those of Honduras and Nicaragua, have been repeatedly destroyed by earthquakes since the advent of the Spaniards in the sixteenth century. The principal sufferer has been Guatemala City, which has been practically destroyed more than half a dozen times, the latest calamity befalling it in 1917. But Gautemala has had no monopoly of disasters. San Salvador, capital of the republic of the same name, and Cartago, near the capital of Costa Rica, have been shaken into ruins on more than one occasion.

Ancient Earthquakes Poorly Reported

The city which has suffered most greatly in South America is Valparaiso, Chile. Great damage was inflicted by earthquakes in 1730, 1822, 1839, 1873 and

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LAYING DOWN A BARRAGE AGAINST CATERPILLARS IN A CATALPA GROVE

Flying at the rate of 80 miles an hour, at an altitude of from 20 to 30 feet and on a line parallel with and 53 yards to the windward of a catalpa grove. A wind, varying from 8 to 11 miles an hour, was blowing in the direction indicated by the arrow. The grove lies directly ahead of the point of the arrow, and is surrounded on the two sides by fields of growing corn. (See Bulletin No. 2.)

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Airplanes in the War on Insects

THE AIRPLANE, believed by many to be the most important engine of war today, is making itself felt in a different kind of conflict, the war against insects. The increasing use of airplanes armed with chemicals to fight the boll weevil, destructive moths laying waste to forests, and other representatives of the Lilliputian insect army, recalls the success of the pioneer activity in this regard.

C. R. Neillie and J. S. Houser, in a communication to the National Geographic Society, related their practical test of a chemical attack from aloft upon the gipsy moth as follows:

"In these very modern times one should be prepared to expect the unusual, but to be told upon inquiry for a man at his office that 'He is up in the air; I don't know when he will come down' is so ultra modern that the average person would be taken somewhat aback.

Callers Wait: Man "Comes Down"

"Such, however, was the experience of the writers one summer day during the course of the work herewith reported. And after a short time, the one for whom inquiry was made did safely 'come down.' This was Lieutenant J. A. Macready, Acting Chief of the Flying Section of the Government's Aviation Experimental Station at McCook Field, Dayton, Ohio—the man who piloted the machine which was an epoch maker in the annals of insect warfare.

"Two years ago there occurred in Ohio three full broods or crops of the caterpillars, each sufficiently numerous to defoliate completely the grove in which they appeared. Some groves put out three full crops of foliage and each in its turn was wholly consumed by the ravenous worms.

"Our work was directed against the second brood of caterpillars working on the second crop of foliage.

Method of the Attack from the Air

"The plane used was a Curtis JN-6 equipped with a hopper for carrying and liberating the poison powder. This hopper was secured to the fuselage of the plane by the side of the observer's seat. It consisted of an irregularly shaped flat metal box with a capacity for holding a little more than 100 pounds of dry arsenate of lead powder.

"At the bottom was arranged a sliding gate, operated by a handle accessible to the observer in the plane. At the top of the hopper was a crank, connected by a sprocket chain to a revolving mechanism in the bottom, which when placed in motion dropped the poison powder through the previously opened sliding gate.

"Immediately upon leaving the hopper the dust dropped into the 'slip stream'—the violent air current set up by the revolving propeller—and was thrown into violent agitation in a dense white cloud which trailed out behind the moving plane as if the machine were on fire and belching large volumes of white smoke.

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most recently in 1906. As early as 1586 earthquakes were bringing destruction to the Pacific Coast of South America, Callao being destroyed in that year.

The seeming lack of great earthquake calamities in ancient times may be due more to the absence of complete records than to the inexplicable escape of the great cities of the past. It is worthy of note, however, that because of the types of buildings in use, usually low and often with roofs of straw, no great loss of life would result normally, even in congested centers.

Antioch Next to Tokyo in Loss

There was never any outstanding destruction in Rome as a result of earthquakes, so far as history shows; but Rome did have its quakes, and some students of history assert that the large number of Roman palaces and temples believed to have been destroyed by the barbarians between the fifth and ninth centuries were really shaken down by earth tremors.

The earliest historic earthquake which caused a tremendous loss of life, and the most destructive, if the statistics can be accepted, save perhaps the recent quake in Japan, occurred in Antioch and nearby towns in Syria in 526 A. D. This was then a city of some half a million or more inhabitants, the capital of the East, and, save Rome itself, probably the most important city of the Roman world. In addition to the residents of the city, large crowds were gathered for a Christian festival. The great convulsion that shook the city and the neighboring towns, and the fires that followed are said to have caused the death of more than 200,000 persons.

Thousands of residents of Tokyo are said to have believed the legend that a great fish lived underneath the city and would one day shake it to its foundations. Tokyo's fish has a counterpart in the legendary dragon which residents of early Antioch thought was buried under the mountains near their town, whose frequent writhings and twistings were supposed to be the cause of the numerous earthquakes along the river valley.

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Nayarit—Mexico's Youngest State

THE STATE of Nayarit, Mexico, will be looked for in vain if one depends on maps or reference books printed more than six years ago.

This tropical, Pacific Coast region of Mexico was the territory of Tepic, but Mexico, like the United States, has been steadily revamping her territories into states, and old Tepic, rich in memories of the Spanish regime, was the latest to undergo the transformation. When it was advanced in 1917 to the status of statehood it took as its name that of the Nayarit Mountains which extend into the region from the north.

Mexico's Longest River Flows Through Region

In a communication to The Society, Herbert Corey, who recently traveled through Nayarit, describes as follows the valley of the Santiago, Mexico's longest river, the leading agricultural section of the new state:

"One does not often hear of the Santiago River, and yet it is the longest in Mexico. Rising in the state of Mexico, it flows through Lake Chapala and on to the sea near San Blas. Cortez sailed it for some distance with his little barks. At intervals it roars through barrancas which are sometimes 2,000 feet below the level of the surrounding plain, and in which the Indian farmers find a super-tropic climate that forces vegetation as might an equatorial hothouse. During the rainy season the river spreads 25 miles wide through the flat, jungle-grown lower lands.

"It runs through farming land that could feed two or three of our own states, if the farmers were only given a chance to farm and not compelled at the muzzles of rifles to drop the plow and be *patriotas* every little while.

"This land would grow any sort of a tropical crop if it were given a chance. One can in season ride through miles of wild limes and lemons rotting on the ground. The thought of cultivating oranges has never yet come to the peon. It has not even occurred to him to fight the black scale or whatever other enemy may attack the trees. The cocorito palm is responsible for a local soap-making monopoly, for its kernels are 65 per cent oil.

San Blas Rests Content in the Sun

"There are fields of sugar-cane, and bananas flourish wherever planted. The best coffee in the world—at least as good coffee as there is in the world—comes from this district. Rice and tobacco and dates and figs grow almost without attention. In the barrancas the vanilla bean is found.

"Through Nayarit, from its ancient Pacific port of San Blas, runs the remains of the old Spanish Road eastward to Mexico City and down through the lowlands beyond to Vera Cruz on the Atlantic. Thanks to The Road, the east-bound convoys from the Philippines were spared the perilous traverse around Cape Horn.

"The main highway was defended by forts or by minor outposts at strategic points, and from it lesser trails were driven into the hills or the more inviting valleys, for the convenience of priest and miner.

"Not until Porfirio Diaz began to build the net of Mexican railroads did The

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Spray Six Acres of Trees With Insect Killer

"The catalpa grove in which the dusting was done was situated on level ground and had been planted for the growing of post and pole timber. It was a rectangular plot 800 feet long and 325 feet wide and contained approximately six acres. The trees, 4,815 in number, were from 25 to 30 feet tall.

"The plane flew at a speed of eighty miles an hour at an altitude of from 20 to 35 feet and in line 53 yards to the windward and parallel to the grove. The dense cloud of poison dust thrown out behind the moving plane was grasped by the wind and floated through and over the grove, covering the foliage in its passage.

"In all, the dusting plane passed the grove six times and distributed about 175 pounds of the poison. Since each passage required but nine seconds, the total time consumed in the actual work of dusting was 54 seconds, thus establishing a world's record for speed in applying insecticides to forest areas.

"The outstanding feature of the application was the remarkable precision with which the poison could be placed at the point intended, thus dispelling the idea expressed by many before the test was made that the poison dust would be tossed willy-nilly by the air currents—wholly beyond control.

Poisoned Insects Die by Millions

"On the morning following the application of the dust some of the caterpillars were dead and many were ailing. Forty-six hours after the fog of dust had polluted their food, the evidences of the wholesale destruction of the insects were everywhere apparent.

"Hanging on the branches and remnants of foliage, on fence posts and weeds; lying on the forest floor and secreted beneath its refuse were literally millions of the insects. Not a step could be taken without crushing numbers of them, some of which already had begun to putrefy.

"Large sheets had been spread beneath the trees to record the dead caterpillars as they fell, but here again the photographic record is inadequate, for the dying insects had a tendency to use what strength remained to crawl off the sheet to die in seclusion. Nevertheless, on five square feet of one of the sheets 100 dead insects were counted.

Results Exceeded Highest Hopes

"The effect on the insects had far exceeded our fondest expectations. We had confidently believed that the smaller caterpillars would be killed, but had scarcely dared to hope that we would be able to kill the large larvae, since it is a well known fact that the full-grown caterpillars are difficult to poison.

"A careful investigation revealed the astonishing fact that not over 1 per cent of the caterpillars remained alive on the trees, and the minute observations and notes by the experts who witnessed the test preclude the idea that the destruction of the insects could be attributed to any other agency than the poison."

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How Fashion Makes the Fur Fly

NATURALISTS all over the United States are worrying over the probable extinction of certain of our mammals due to the decree of fashion that women wear furs all four seasons of the year. Museums are hastening to obtain specimens for their collections before it is too late. Newspapers say that we are enriching the interior of Africa by wearing monkey fur on our garments. Soon some of the animals which exist in abundance today will be in the class with the dodo and the auk.

It is only by educating the American public to the need for periods of protection for these animals that we will be able to preserve one of the country's most valuable assets for the enjoyment and profit of future generations.

Seals Exterminated from Pacific Island

An expedition to the island of Guadalupe off the coast of lower California, which the National Geographic Society recently helped finance for the purpose of finding if any specimens of the fur seals which once lived there in great colonies still were to be found, proved conclusively that no traces of these animals have appeared on the island for many years. They have been exterminated by unscrupulous fishermen. Unless the public comes to appreciate the danger menacing many of our other fur bearers throughout the country, their life story may soon be that of the seal.

It has been estimated that America spends yearly $100,000,000 for fur garments, the trade of fur merchants in raw and manufactured furs for import and export trade in New York alone being about $375,000,000.

And for such a trade Billy Beaver, Tommy Marten, Jackie Skunk, and Harry Muskrat—to slip into the nomenclature of bed-time stories—are not only paying with their lives but with the threatened existence of their kind. The high prices which have been offered for their pelts have led to intensive trapping, to the clearing of woodland and to the draining of marshes. In many parts of our country beavers and martens have been exterminated, and even Alaska is beginning to worry about the growing scarcity of fur-bearing animals within her boundaries.

Muskrats Raise Mortgages for Farmers

Some of the states of the Union have realized the danger into which they have fallen and are establishing closed periods for some of the most valuable of the fur bearers. Until a few years ago the farmer who had marshland infested with muskrats on his farm voiced violent prejudice against the little animals, and set out to exterminate them; now that same farmer knows that these muskrats can become as valuable as any of the livestock on his place. He protects them during the mating season, and takes only a reasonable number of pelts for market during the dead of winter when the fur is good.

The great demand for furs has led to the rapid increase of fur-farming throughout this country and Canada. Recent reports say that there are already about 800 fox farms in Canada alone and that the owners of them are growing

Road begin to fall into disuse, and even today there are wide stretches of country which can only be reached by it. In these back blocks one sees the Mexico that appeared to the eyes of Baron Humboldt and Madam Calderon de la Barca.

"In San Blas, Sinaloa, a hand-organ began to purvey mournful sounds, and a dry-river prospector and I drifted after it.

"The street sights drew me. A very handsome woman sat in the dust, her back against the wall, a little knee-high stand in front of her. She sold oranges at three for a cent, or some such trivial price. One of her eyes had been blacked, her feet were bare, and a rounded shoulder showed through the rents in her gown.

"Burros swung around the corner, engrossed in thought, as burros always are. Each dragged a pair of small logs lashed to the packsaddle.

"The keepers of the little eating stands at the station began to get ready for the day's one train. Each had a tin which had once contained five gallons of gasoline and out of which a tiny stove had been constructed. Two or three young Americans, grave, dusty, high-booted, revolvered, marched down the street—young engineers, two years out of college.

"Three-inch Bain wagons jolted past in incredible noise and dust. They were drawn by oddly harnessed teams, four mules abreast on the pole and from six to ten as lead and swing teams.

"The white-hot sun burned deliciously upon our backs. It devoured the filth in the streets, so that the only perceptible odor was of the fragrant oranges at the pretty woman's stand, or the occasional acrid reek of a cigarette."

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AN AGE-OLD SWEETMEAT OF MEXICO

The workman in the foreground is pouring the syrup of sugar-cane from a ladle of ebony wood into the wooden molds. In this way panocha, the most universal sweetmeat of Mexico, is prepared. It tastes and looks much like our maple sugar, and extraordinary virtues are attributed to it by the Indians. (See Bulletin No. 3.)

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Coal of Arctic Island Helps to Keep World Warm

THE PRECIOUSNESS of coal to a modern world needs no further illustration than the fact that men will go to Spitsbergen for it. On this cold-storage island, however, favorable weather during the past summer has permitted the making of important surveys never before possible. It is one of the few Arctic or Antarctic lands that are being made to yield up minerals to the temperate zone.

The northern tip of Alaska to which a few government officials push each summer may seem all too close to the North Pole for the average dweller of the warmer regions of the earth to live in unless he is pursuing scientific investigations. In Spitsbergen, however, which is 600 miles closer to the top of the world, several hundred men of Europe and America are making their homes the year round while they strip coal from beneath the ice-covered mountains. It is excellent coal, too, and there is every reason to believe that the mining operations will grow steadily.

Formerly Was "No-Man's-Land"

The discovery early in the twentieth century that Spitsbergen's coal underlies large areas brought it suddenly back to the world's attention and made sovereignty over it well worth claiming after it had been abandoned for generations as a sort of no-man's land. Barents, a Dutchman, discovered Spitsbergen in 1596, according to the usual records; but the Norwegians claim that their seamen visited the islands at earlier dates. Henry Hudson, searching for a northern passage to the Orient in 1607, learned of the vast number of whales near the islands and as a result Spitsbergen's waters became for a time the world's greatest whale fishery.

The Dutch were foremost in this development. By the time of America's Revolutionary War whalers from the Netherlands had taken about $100,000,000 worth of whale products from the region. Catches became so great in the early years of the exploitation that the ships were embarrassed to haul the blubber home.

Millionaires of the Pilgrim Days

During the most profitable period of the Dutch fishery, 1620–1635, it is within bounds to say that more than 300 Dutch ships and more than 15,000 men visited Spitsbergen annually. More than 18,000 men were on the coast in one summer, according to one authority. It is definitely known that 188 whalers congregated at one anchorage in 1689, and in 1680 the Dutch sent out 260 ships and about 14,000 men, who made a catch amounting to nearly a million and a quarter of dollars.

In the train of the whalers followed merchant vessels, loaded with wine, brandy, tobacco, and edibles unknown in the plain fare of the hardy fishers. Shops were opened, drinking booths erected, wooden (and even brick) tile-covered houses constructed for the laborers or visiting whalemen. Even bakeries were constructed, and, as in Holland, the sound of the baker's horn, announcing hot, fresh bread, drew crowds of eager purchasers. If report errs not, even the Dutch frau of 1630 was sufficiently enterprising to visit Smeerenberg.

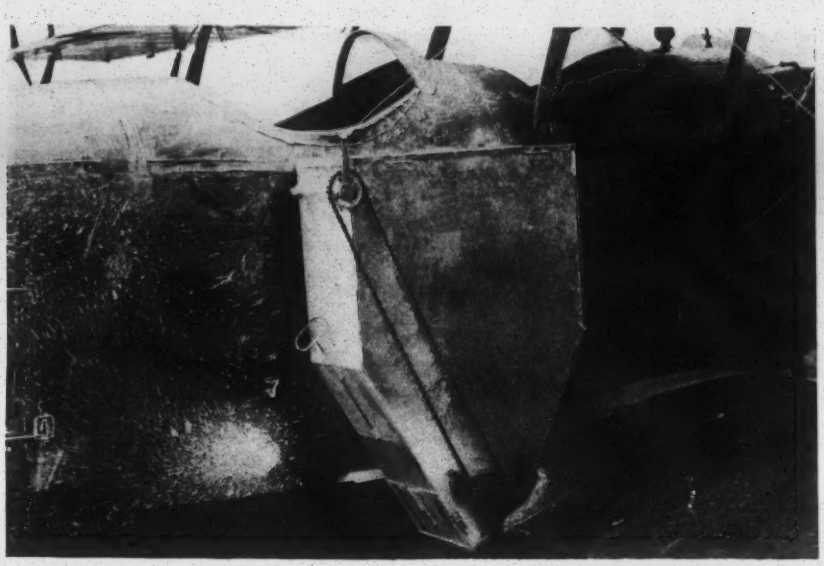
wealthy on their profits. The small fur bearers are very prolific and there are millions of acres of land in this country where they would multiply in great numbers if they were given the proper encouragement, and if intelligence were exercised in taking the pelts.

Government Working Out Fur Farming Problems

The United States Biological Survey has been making an intensive study of the best methods of raising wild animals in captivity, and reports that foxes have been raised with great success. Silver foxes, blue foxes, skunks and muskrats can be raised successfully, and further investigations are being made into the possibility of raising minks, martens and fishers, which up to the present time do not breed in capitivity or else produce inferior animals.

Various methods have been suggested for bringing the fur supply within the neighborhood of the demand. Large tracts in various parts of the country could be set aside as permanent preserves. It has also been suggested that the National Forests might be administered as game preserves, the National Forests of Colorado alone being capable of producing $100,000 worth of fur each year by the conservation of the wild animals which already live within their confines.

Bulletin No. 4, November 26, 1923.



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THE POISON POWDER HOPPER ATTACHED TO THE AIRPLANE FUSELAGE

When the aperture at the bottom of the hopper is opened by pulling the looped wire handle upward, and the crank above is turned, the sprocket chain revolves a mechanism which throws the powder out. Upon its release from the hopper, the powder is seized by the "slip stream," the violent current of air from the propeller, and is immediately converted into a dense cloud of dust, which floats out behind the plane. (See Bulletin No. 2.)

An Arctic "Summer Town" of Faded Fame

A thriving "summer town," Smeerenberg, was established and flourished for a score of years. It was an anomalous community, a Dutch town in the frozen Arctic, with its shops, drinking places, and bakeries in addition to the oil refineries, cooperage establishments and smithies of the whaling industry. When the whales in the immediate neighborhood of the islands were destroyed and the whalers had to go farther afield for their catches, Smeerenberg dwindled away. About the only reminder of this one-time thriving Dutch community is the cemetery of a thousand or more graves in the cheerless, frozen earth.

In 1920 a treaty signed by most of the leading European nations and the United States recognized the sovereignty of Norway over Spitsbergen. The islands have an area roughly of 25,000 square miles, about that of West Virginia. Its lofty, needlelike peaks are mantled almost from bottom to top in perpetual snow and between are huge glaciers. One great ice-river, the Queen Maud Glacier, is fifty miles wide.

The ill-starred expedition of the Swedish explorer, Andree, who hoped to reach the North Pole by balloon, took to the air from Spitsbergen in 1897. The fate of the members of the expedition was never learned. A few message-buoys dropped the day of the start were found near Spitsbergen. No later word was received.

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CUTTING A HUGE WHALE AT A SHORE STATION IN THE FAR NORTH.

The cutters, or "flensers," make longitudinal incisions in the blubber of the whale, and then peel it off like the skin from an orange. When the "blanket pieces," as the blubber strips are called, have been torn from the carcass, they are cut into blocks, dumped into enormous vats, and boiled, or "tried out," for oil. (See Bulletin No. 5.)